

REMARKS

Claims 1-27 are pending in this application, stand rejected and are at issue herein. Claims 17, 24 and 25 have been amended as indicated hereinabove. Reconsideration of claims 1-27 in view of the foregoing amendments and following remarks, and indication of the allowability of all claims pending herein at an early date are respectfully solicited.

The Examiner has objected to the drawings under 37 CFR 1.83(a) as failing to show every feature of the invention specified in the claims. Specifically, the Examiner has indicated that the two battery packs coupled in series to supply output power to a connected load and a battery charger, the connected load, the channel, the parallel coupled battery channels, the user, the voltage sense circuit, the voltage sense selector circuit, the operating mode specific predetermined expected value, the equipment type identifier, etc. are not shown in the drawings. However, the applicants respectfully submit that the features that are required to be shown in the drawings under 37 CFR 1.83(a) are shown in the drawings as originally filed, and are, therefore, perplexed by such objection.

Specifically, the battery charger is shown in FIG. 1 as element 23 as are the battery packs 22. The plurality of battery channels coupled and parallel are also illustrated in this FIG. 1 as described in the originally filed specification, paragraph [0051]. The presence detector, as described in the originally filed specification in paragraph [0062] and in paragraph [0065], may be in the controller 43 by, for example, the use of a module send input 92_{a-c} illustrated, for example, in FIG. 12. The series connection of the batteries is also shown in FIG. 12 designated as battery center tap and is described in the originally filed specification in paragraph [0006], [0007], [0015], [0021] and [0023]. Likewise, the voltage sense circuit is shown in FIG. 12, as is the voltage sense selector circuit. Indeed, these circuits are described in detail in paragraph [0063] of the originally filed specification with reference to Fig. 12.

Certain items identified by the Examiner are not claimed subject matter, and therefore are not required to be shown in the drawings. These items include the connected load and the user. Other items identified by the Examiner are intangibles and are not subject to be shown in the drawings. These items include the "predetermined expected value" and the "equipment type identifier," each of which are described in the originally filed specification in such terms to be fully compliant with 35 U.S.C. § 112.

In view of the above, the applicants respectfully submit that the drawings do show every feature of the invention specified in the claims in accordance with 37 CFR 1.83(a). Reconsideration of this ground of objection and indication of the acceptability of the originally filed drawings are therefore respectfully solicited.

The Examiner has also objected to the specification as failing to provide proper antecedent basis for the claimed subject matter "two battery packs coupled in series to supply output power to a connected load and a battery charger," "first nominal value", "first predetermined amount", "second nominal value", "third nominal value", "average midpoint voltage value for all slots," etc. The applicants are also perplexed with regard to this ground of objection. Specifically, neither 37 CFR 1.75(d)(1) nor MPEP §608.01(o) require that ordinal designators within the claims be specifically included in the specification. That is, while conventional claiming practice requires that different "nominal values" be designated differently for clarity of the claims by using, for example, ordinal indicators first, second, third, etc., there is no requirement that the description contained in the specification use such identical ordinal indicators.

The specification does provide a discussion of the use of nominal values and predetermined amounts which, in the context in which they are used in the specification, clearly describe the invention in accordance with 35 USC §112. Specifically, the specification describes the various nominal values used in the system of the present invention in, for example, paragraphs [0015], [0016], [0017], [0018], [0019], [0020], [0067], [0068] and [0069]. Similarly, the specification also describes the various predetermined amounts in, for example, paragraphs [0015], [0016], [0017], [0018], [0019], [0020], [0021], [0022], and [0068].

The applicants respectfully submit that there is no requirement that the ordinal indicators that are required by conventional claiming practice in the claims are also required in the written description of the specification. See, e.g., MPEP 2163 (citing *Vas-Cath*, 935 F.2d at 1563, 19 USPQ2d at 1116; *Martin v. Johnson*, 454 F.2d 746, 751, 172 USPQ 391, 395 (CCPA 1972) ("the description need not be *ipsis verbis*")).

With regard to the objections for the phrases "two battery packs coupled in series to supply output power to a connected load and a battery charger," the originally filed

specification describes such coupling in paragraphs [0006], [0007], [0015], [0021] and [0023]. The connection of the battery charger is described in paragraphs [0006], [0011], [0015], [0021], [0023], [0029], [0030], [0031], [0050], etc. The "average midpoint voltage value for all slots" is described in originally filed paragraph [0016], [0018], [0020], [0021], etc.

In view of the above, the applicants respectfully submit that the specification is in proper form and provides proper antecedent basis for the claimed subject matter as required by 37 CFR 1.75(d)(1) and MPEP §608.01(o). Reconsideration of this ground of objection and acceptance of the specification as originally filed are respectfully solicited.

The Examiner has objected to claims 2, 17-20, 24 and 25 for certain noted informalities. The applicants have thoroughly considered the identified informalities, and must respectfully traverse these objections for the reasons stated below. Reconsideration of these grounds of objection and removal thereof in view of the following remarks are respectfully solicited.

The Examiner has objected to claim 2 because "the first nominal value" and "the first predetermined amount" recited in claim 2 lacks antecedence. With this statement, the applicants respectfully disagree. Independent claim 1, from which claim 2 depends, includes the step of comparing the voltage to "a first nominal value." Claim 2 further defines the phrase "a first nominal value" by including the step of "calculating the first nominal value for the mid-point voltage during the quiescent state of operation of the battery packs as the average of the voltage is monitored for each parallel coupled battery channel." The "first nominal value" recited in claim 2 is the "first nominal value" introduced initially in independent claim 1. As such, no lack of antecedent basis exists. Similarly, independent claim 1 recites "a first predetermined amount" which is the same "first predetermined amount" recited in claim 2. The fact that independent claim 1 recites a method for a UPS system having at least one battery channel and claim 2 recites a method wherein the UPS system includes a plurality of battery channels does not change the fact that proper antecedent basis for these terms exists in claim 1. Reconsideration of this ground of objection is therefore respectfully solicited.

The Examiner has included a discussion of claims 3-5, 6, 7, 9-11, 12, 13 and 14, but has not indicated that these claims are objected to in the opening sentence of paragraph 3 of

the Office Action. Nonetheless, the applicants will address the description of these claims in case the lack of inclusion thereof in the opening sentence of paragraph 3 of the Official Action is in error.

With regard to claims 3-5, the Examiner has stated that "second nominal value" and "second predetermined amount" need to be defined in reference to "first nominal value" and "first predetermined amount" recited in claim 1. The applicants respectfully submit that these claim terms in claims 3-5 are properly recited and properly distinguish the first nominal value from the second nominal value and the first predetermined amount from the second predetermined amount in accordance with 35 USC § 112. Specifically, the first nominal value and the first predetermined amount recited in claim 1 are used for the voltage monitored at a midpoint between the two battery packs during a quiescent state of operation of the battery packs, while the second nominal value and second predetermined amount are used for the voltage monitored at a midpoint between the two battery packs during float charging of the battery packs. As such, the applicants respectfully submit that these second values do not need to be defined with reference to the first values as the distinction between the two is clear from the claims and the originally filed description contained in the specification. Reconsideration of this ground of objection is therefore respectfully solicited.

The Examiner has indicated that claim 6 recites "a plurality of battery channels coupled in parallel with one another" while claims 1 and 3 upon which claim 6 depends recites "one battery channel, each having at least two battery packs coupled in series." From this, the Examiner draws the conclusion that "the second nominal value" and "the second predetermined amount" recited in claim 6 lacks antecedence. The applicants respectfully submit that proper antecedence is contained in claim 6 because the second nominal value and the second predetermined amount recited therein are the second nominal value and second predetermined amount recited in claim 3. Simply adding a plurality of battery channels and defining how the second nominal value is calculated in claim 6 does not change the proper antecedence of these terms.

Further, the Examiner states that "second nominal value" and "second predetermined amount" need to be defined in reference to "second nominal value" and "second predetermined amount" recited in claim 3. The applicants respectfully submit that these terms are properly used in claim 6 and 7 as they include the indefinite article "the" while claim 3 utilizes the indefinite article "a" to refer to these elements. As such, the applicants

respectfully submit that they have utilized proper antecedent basis through the use of the indefinite article "a" in the initial introduction of these elements and the indefinite article "the" in subsequent recitations of these elements. Reconsideration of this ground of objection is also respectfully solicited.

The Examiner has indicated that claims 9-11 include terms "third nominal value" and "third predetermined amount" that need to be defined in reference to "first nominal value" and "first predetermined amount" recited in claim 1. The applicants respectfully submit that no such requirement exists in the patent statutes, and that these elements are properly described in the originally filed specification. As such, the applicants respectfully submit that these claims properly recited these elements and respectfully request reconsideration of same.

The Examiner has further stated that since claim 12 recites a plurality of battery channels while claims 1 and 9 recite a single battery channel that the third nominal value and third predetermined amount lack antecedence. As stated above, the applicants respectfully submit that inclusion of additional battery channels does not destroy the proper antecedent basis for these claim terms as properly introduced in claim 9 and again recited in claim 12. Reconsideration of this ground of objection is therefore respectfully solicited.

Additionally, the Examiner has objected to claims 12 and 13 stating that the third nominal value and third predetermined amount recited in these claims need to be defined in reference to the third nominal value and the third predetermined amount recited in claim 9 upon which these claims depend. The applicants respectfully submit that these terms utilize the indefinite article "the" in claims 12 and 13 to refer specifically to the same elements recited in claim 9 that utilize the indefinite article "a." Such claiming language is conventional and properly observes the requirement for antecedence. Reconsideration of this ground of objection is therefore respectfully solicited.

The Examiner has further stated that in claims 12-14 the third nominal value and the third predetermined amount need to be defined in reference to the first nominal value and the first predetermined amount recited in claim 9 upon which these claims depend. The applicant respectfully submits that there is no such requirement and that these elements are properly identified in the claims and fully described in the originally filed specification in accordance with 35 USC § 112. Reconsideration of this ground of objection is therefore respectfully solicited.

The Examiner has objected to claim 17 because the recitation of the "a predetermined amount" is not clear since the same "predetermined amount" is used for two different steps. The applicants have amended the indefinite articles "a" of the predetermined amount to the indefinite articles "the" to clarify that they refer to the same predetermined amount. The applicants respectfully submit that the same "predetermined amount" is not used in two different steps, but is used to further define the step of identifying a failed battery pack. As currently amended, the applicants respectfully submit that this claim is not objectionable. Reconsideration of this ground of objection in view of the amendment to claim 17 is respectfully solicited.

The Examiner has objected to claim 18 because the phrase "first predetermined value" and "first predetermined amount" need to be defined in reference to "predetermined expected value" and "predetermined amount" recited in claim 17. The applicants respectfully traverse this requirement as claim 18 recites a specific condition, *to wit* the step of determining an operating mode of the battery packs determine that the battery packs are operating in a quiescent mode, and further defines the step of identifying the failed battery pack within the slot as requiring the step of identifying both battery packs as failed when the voltage for their associated slot is less than a first predetermined value by a first predetermined amount. This claim recites a specific condition and utilizes the phrase "a first predetermined value" and "a first predetermined amount" to distinguish these values from a different condition described and claimed in claim 19, wherein the phrases "a second predetermined value," "a second predetermined amount," "a third predetermined value" and "a third predetermined amount" are used. As such, the applicants respectfully submit that claims 18 and 19 each properly identify these different values and amounts in a more specific manner than is claimed in claim 17 upon which these claims depend. Reconsideration of the objection of claims 18 and 19 are therefore respectfully solicited.

Additionally, claim 20 also further defines a different operating condition that utilizes different values and amounts than recited in claims 18 and 19. As such, the ordinal indicators "fourth" and "fifth" are utilized in claim 20 to clearly distinguish these values and amounts from the values and amounts described and claimed in claims 18 and 19. As such, the applicants respectfully submit that claim 20 also properly claims these values and amounts. Reconsideration of the objection of claim 20 is therefore respectfully solicited.

The Examiner has objected to claims 24 and 25 because the recitation of "the associated slot," first occurrence, lacks antecedents. The applicants respectfully submit that this ground of objection has been overcome through the amendment of claims 24 and 25 to change the indefinite article "the" to the indefinite article "an" in each of these claims as appropriate to overcome this objection. Reconsideration of claims 24 and 25 in view of the foregoing amendment is respectfully solicited.

The applicants respectfully submit that claims 1-27, as amended and as discussed above, no longer contain any antecedence or other informalities that would make them objectionable. Reconsideration of the objections to claims 1-27 in view of the foregoing amendments and remarks are therefore respectfully solicited.

The Examiner has rejected claims 1-14 under 35 USC § 103(a) as being unpatentable over "A Systems Approach to Telecom Battery Monitoring and Control Using the Rectifier Power Plant" by Kevin White (hereinafter White) in view of Burkett, U.S. Patent No. 3,626,270. The applicants have thoroughly considered each of these references alone and in combination, and must respectfully traverse this ground of rejection. Reconsideration of this ground of rejection in view of the following remarks and indication of the allowability of claims 1-14 at an early date are respectfully solicited.

Initially, the Examiner indicates that the preamble of independent claim 1 is ambiguous because it appears that the batteries are supplying power to both a load and a charger. The applicants respectfully submit that this reading of the preamble is in error, and that, when taken in context, the preamble recitation is not ambiguous. Specifically, the preamble requires that the UPS system have at least one battery channel, each having at least two battery packs coupled in series to supply output power to a connected load and a battery charger to maintain and restore charge to the batteries during normal utility line operation. As originally filed, this preamble recitation requires that the UPS system have at least two battery packs coupled in series and a battery charger. The function of the at least two battery packs coupled in series is "to supply output power to a connected load" and the function of the battery charger is "to maintain and restore charge to the batteries during normal utility line operation."

With regard to the merits of this rejection, the Examiner states that White does not disclose a battery charger or the step of monitoring the voltage at a midpoint during a

quiescent state of operation of the battery packs. To overcome this limitation, the Examiner cites to Burkett. However, as will be described more fully below, because Burkett teaches away from the use of its disclosed method with battery packs with two or more cells, and because the method of Burkett is not utilized to identify operational readiness, the applicants respectfully submit that one of ordinary skill in the art would not be motivated to combine the teachings of these references, and therefore these claims are not rendered obvious in view thereof.

The teaching of Burkett is specifically limited to the use with single cells. Specifically, Burkett describes in the first column, lines 5-7 that the method is particular for rapid charging of "single cells." In the background section, Burkett describes that charging of "single nickel cadmium cells poses some new problems not encountered with battery packs with two or more cells." Burkett, Col. 1, lines 11-13. Indeed, the method of Burkett is described as being necessary for single cells because "the cell terminal voltage at which rapid charging should be terminated to prevent damage to the cell must be sensed within closer tolerance ranges than the terminal voltage for multi-cell battery packs." *Id* at lines 17-21. In view of the distinction between single cells and battery packs having multiple cells, Burkett describes that "the method of the present invention is particularly adapted to the charging of single cells..." *Id* at lines 29-30.

While it is true that the method of Burkett terminates the rapid charging of a single cell battery using the quiescent terminal voltage of that single cell, this in no way implies that such sensing of a quiescent voltage of a single cell would, in any way, be applicable to the determination of operational readiness of a battery channel having at least two battery packs coupled in series. As such, Burkett not only teaches away from the combination proposed by the Examiner, but the applicants respectfully submit that there is little likelihood of success from such a proposed combination. This is because sensing the quiescent voltage of the single cell is used only to determine when it is appropriate to terminate the rapid charging of this single cell. The quiescent voltage sensed is not used to determine the operational readiness, but only when to terminate the rapid charging of the battery. However, even if the rapid charging of the battery is not yet completed, this does not mean that the single cell battery is not operationally ready.

In view of the above, the applicants respectfully submit that a *prima facie* case of obviousness has not been made out with regard to claims 1-14. Reconsideration of this

ground of rejection and indication of the allowability of claims 1-14 at an early date are respectfully solicited.

Further, even assuming, *arguendo*, that a combination of these references could be maintained, such a combination still fails to teach each and every limitation of claims 1-14. As such, the applicants respectfully submit that a *prima facie* case of obviousness has not been made out for this additional reason.

Specifically, independent claim 1 requires the step of monitoring a voltage at a midpoint between two battery packs during a quiescent state of operation of the battery packs and comparing the voltage to a first nominal value..." White, however, requires instead that "the voltage of the top and bottom halves of the battery are compared for acceptable matching." White, page 628. The applicants respectfully submit that the requirement of White that two voltages be monitored and compared does not satisfy the limitation of independent claim 1 of monitoring a single voltage at a midpoint between the two batteries and a comparison of that single voltage measurement to a nominal value. While the Burkett reference does describe monitoring a single voltage, this voltage is not taken at a midpoint between two battery packs, but is instead taken at the cell terminal of the single cell battery. As such, neither of these references taken alone or in combination teaches the required step of monitoring a voltage at a midpoint between two batteries and comparing that voltage to a first nominal value to determine an operational readiness of both battery packs. As such, the applicants respectfully submit that neither of these references taken alone or in combination meets all of the limitations of independent claim 1, and therefore independent claim 1 and those claims dependent thereon, *to wit* claims 2-14, cannot be rendered obvious in view thereof. Reconsideration of this ground of rejection and indication of the allowability of claims 1-14 at an early date are therefore respectfully solicited.

With regard to dependent claim 2, the Examiner has taken the position that the limitations thereof are held to be a matter of obvious design choice within the general skill of a worker in the art. The applicants respectfully traverse this statement, and respectfully submit that it is improper to reject this claim by merely characterizing all of its limitations as obvious design choice when neither White nor Burkett describe or even suggest the steps required thereby. Specifically, neither White nor Burkett teach or suggest a UPS system including a plurality of battery channels coupled in parallel with one another, let alone the steps of calculating the first nominal voltage for the midpoint voltage during the quiescent

state of operation of the battery packs as the average of the voltages monitored for each parallel coupled battery channel or providing an indication of lack of operational readiness of a battery channel when the voltage at the midpoint of the battery packs for that channel is less than the first nominal value by the first predetermined amount.

Further, the steps required by dependent claim 2 do not related to changes in size, shape, or sequence of adding ingredients, do not constitute making integral, and do not constitute the mere rearrangement of parts, each of which have been held to be matters of mere obvious design choice as described in MPEP § 2144.04. Instead, the method steps added by dependent claim 2 are wholly novel and non-obvious in view of the combination of White and Burkett as they address a system not contemplated by either system, and provide a method of isolating a lack of operational readiness to a particular battery channel in a UPS system including a plurality of battery channels coupled in parallel. As such, the applicants respectfully submit that the limitations of claim 2 are not a matter of mere obvious design choice. Reconsideration of this ground of rejection and indication of the allowability of claim 2 at an early date are respectfully solicited.

In view of the above the applicants respectfully submit that claims 1-27 are in condition for allowance. Reconsideration of claims 1-27, the specification and drawings, and indication of the allowability thereof in view of the foregoing remarks are respectfully solicited.

With regard to claims 3-14, the Examiner has stated that these claims are obvious as they entail the mere duplication of parts that have no patentable significance unless a new and unexpected result is produced. The applicants respectfully traverse this statement as the requirements of claims 3-14 are not merely the duplication of parts or steps. Reconsideration of claims 3-14 and indication of their allowability are therefore respectfully solicited.

Specifically, dependent claim 3 adds three steps that are not merely the duplication of the steps required by claim 1 from which this claim depends. While claim 1 requires the monitoring of the voltage during a quiescence state of operation, claim 3 requires monitoring of a voltage "during float charging of the battery packs." This step cannot be held to be merely a duplication of any step of claim 1. As such, claim 3 cannot be rejected as containing a mere duplication of parts that have no patentable significance. Nor can claims 4-8 that depend ultimately from this dependent claim 3.

Dependant claim 9 also adds the additional step of monitoring the voltage "at a state of discharge of the battery packs." Since independent claim 1 from which this claim depends requires the monitoring of a voltage during a quiescence state of operation of the battery packs, the applicants respectfully submit that it is error to state that this claim contains a mere duplication of parts that has no patentable significance. As such, the applicants respectfully submit that claim 9, and those claims dependent therefrom, to wit claims 10-14, are not rendered obvious as being a mere duplication of parts with no patentable significance. Reconsideration of claims 9-14 and indication of their allowability at an early date are therefore respectfully solicited.

In view of the above, the applicants respectfully submit that claims 1-14 are not rendered obvious by the combination of White in view of Burkett. Reconsideration of claims 1-14 and indication of their allowability at an early date are therefore respectfully solicited.

The Examiner has rejected claims 15-21 under 35 U.S.C. 103(a) as being unpatentable over Marao et al., U.S. Patent No. 6,014,012, in view of PK Electronics and White. The applicants have thoroughly considered each of these references alone and in combination, and must respectfully traverse this ground of rejection. Reconsideration of this ground of rejection in view of the following remarks and indication of the allowability of claims 15-21 at an early date are respectfully solicited.

In the response to the previous Office Action, the applicants requested confirmation from the Examiner that the PK Electronics reference has been considered in this application. While it would appear that the citation and usage of the PK Electronics reference against the claims of the present application would satisfy this inquiry, the applicants have yet to receive a signed indication on a Notice of References Cited form, PTO 892, of such consideration. Therefore, the applicants again request that the Examiner provide such an indication in response to this request and identify a date of this reference that qualifies it as prior art. If such is not provided, the applicants respectfully submit that it is improper to apply this reference.

The Examiner has indicated that Murao et al. does not disclose a UPS system having a plurality of parallel connected slots into which may be coupled the battery packs, power modules, or battery chargers, each slot being adapted to accommodate two battery packs, and

monitoring the midpoint voltage. However, in the discussion of the uninterruptible power supply to which the system of Murao relates, Murao describes that the battery unit comprises "a plurality of storage batteries connected in parallel or in series." Murao, Column 1, Lines 18-19. As such, it does appear that Murao discloses an uninterruptible power supply with parallel connected batteries.

However, regardless of the particular configuration of the storage batteries in the uninterruptible power supply, the system of Murao specifically requires that the voltage of each individual battery ($11_a, 11_b, \dots 11_n$) be monitored to determine the operational status of the individual batteries. Further, the system of Murao also requires that the voltage across all batteries (E) be monitored and compared to a predetermined value as well. As such, Murao et al. does not merely not teach monitoring of a mid point voltage, but actually teaches that the operational status of the batteries of an uninterruptible power supply is determined by measuring the individual voltage across each battery and the total voltage across all batteries (E). These requirements are completely foreign to the system of the present invention as claimed by claims 15-21.

While the PK US 9001 system does describe battery modules that may be plugged into available slots, the Examiner fails to point out any description in the PK reference that would describe a method of detecting and identifying a failed battery pack. As such, the applicants respectfully submit that there is no teaching or suggestion in the combination of these two references to modify the method disclosed by Murao, to wit sensing each individual battery voltage (see for example Fig. 9) and monitoring the battery voltage across all batteries (E). As such, the combination of Murao and PK does not appear to meet the limitations required by claims 15-21.

Recognizing this, the Examiner cites to White to be added in combination with Murao and PK. However, as discussed at length above, the system described in White does not monitor a voltage present at the series coupling between the two battery packs for each slot, but instead monitors the voltage of the top and bottom halves of the battery (BAT1, BAT2). As such, a combination of these three references still does not teach the step of monitoring a voltage present at the series coupling between the two battery packs for each slot into which is installed battery packs. Instead, Murao teaches the monitoring of the voltage across each individual battery and the monitoring of the voltage across all batteries, while White teaches the monitoring of the top half and bottom half of the battery. PK does not disclose how the

battery monitoring is accomplished. As such, the applicants respectfully submit that these references, taken alone or in combination, do not teach the step of monitoring a voltage present at a series coupling between the two battery packs for each slot into which is installed battery packs.

These references also do not describe or suggest the step of detecting a presence and type of equipment installed in each slot. Indeed, the Examiner has wholly failed to identify any teaching or suggestion that meets this limitation of independent claim 15. As such, and in view of the complete lack of any teaching or suggestion, the applicants respectfully submit that the combination of these three references cannot render obvious independent claim 15 or any claimed dependent thereon, to wit claims 16-21.

Independent claim 15 also requires the step of calculating an average midpoint voltage for all slots having battery packs installed therein. In view of the complete lack of teaching or suggestion of this step in any of the references cited against this claim, the Examiner states that such a method step is a matter of obvious design choice. However, as discussed above, this step does not correspond with any of the situations in which a rejection based on obvious design choice has been upheld. Certainly, this method step is not analogous to the selection of a known material on the basis of its suitability for the intended use of the invention as was the case in *In Re Leshin*, 125 USPQ 416 cited by the Examiner. As such, the applicants respectfully submit that it is legal error to fail to consider this method step and to instead discount it as mere obvious design choice. Reconsideration of this ground of rejection is therefore respectfully solicited.

Continuing with claim 15, none of the references cited by the Examiner against this claim taken alone or in combination teach the step of comparing the voltage for each slot to the average midpoint voltage for all slots. Once again, the applicants respectfully submit that this step is not subject to rejection as mere obvious design choice as rejected by the Examiner. See MPEP §2144.04.

In view of the above, the applicants respectfully submit that independent claim 15 and all claims dependent thereon, to wit claims 16-21, are not rendered obvious in view of the references cited by the Examiner. Reconsideration of this ground of rejection and indication of the allowability of claims 15-21 at an early date are respectfully solicited.

With regard to dependent claims 16-21, the Examiner has merely indicated that these claims are obvious as containing a mere duplication of parts. However, claims 16-21 do not contain a mere duplication of parts, but instead add additional steps and/or further modify steps recited in claim 15. As such, the applicants respectfully submit that it is erroneous to characterize these dependent claims as containing a mere duplication of parts when, in fact, these claims recite additional requirements that are not merely duplicative. Reconsideration of this ground of rejection and indication of the allowability of claims 16-21 at an early date are therefore respectfully solicited.

The Examiner has rejected claims 22, 23, and 27 under 35 U.S.C. §103(a) as being unpatentable over Murao in view of PK Electronics. The applicants have thoroughly considered each of these references taken alone and in combination, but must respectfully traverse this ground of rejection. Reconsideration of this ground of rejection in view of the following remarks and indication of the allowability of claims 22, 23, and 27 at an early date are respectfully solicited.

As discussed above, Murao requires that the individual voltages across each individual battery used in the uninterruptible power supply system be monitored. This individual battery voltage monitoring may be seen schematically in Fig. 1, and isometrically in Fig. 9. As may best be seen in Fig. 9, the voltage detecting section 11_a is an individual voltage monitoring circuit that is connected to each of the two terminals 41 of each individual battery. The PK reference is devoid of a description of any particular battery sensing circuitry. As such, the combination of these two references would necessarily have to utilize the voltage sensing described in Murao. Therefore, the combination of these two references fails to teach a voltage sense circuit coupled to each series coupling of each slot. Instead, the combination of these references require that a voltage sense circuit be coupled across each individual battery and a voltage sense across all batteries (E), (see element 13, Fig. 1).

In view of this distinction between the voltage monitoring required by independent claim 22 and that described by Murao, the controller of the combination of Murao and PK cannot compare the voltage sense signal for the particular slot to a predetermined expected value. Instead, the system of Murao in combination with PK will first compare the total voltage across all batteries to an expected minimum and maximum value as identified by steps 105 and 110 of Fig. 2 of Murao to determine whether the total voltage across all batteries is abnormal, and will thereafter compare the voltage across each individual battery

to a preset value to determine whether that individual battery is defective as described by step 118 of Fig. 3 of Murao. No different operation is described by the PK reference.

In view of the above, the applicants respectfully submit that the combination of Murao and PK does not teach each and every limitation of independent claim 22, nor those claims dependent thereon. As such, the applicants respectfully submit that these references taken in combination do not render obvious independent claim 22 or any claim dependent thereon. Reconsideration of this ground of rejection and indication of the allowability of claims 22, 23, and 27 at an early date are therefore respectfully solicited.

Additionally, claim 23 requires that the controller read the voltage sense signal for each slot in which battery packs are installed, calculate an average voltage value, and compare the voltage sense signal for each slot to the average voltage value to identify the operational status of the battery packs for each slot. As discussed above, and as shown in detail in Figs. 2 and 3 of the Murao reference, the controller of Murao does not perform any such function required by this claim 23. Reconsideration of this ground of rejection for this additional reason and allowance of claim 23 at an early date are respectfully solicited.

The Examiner has also rejected claim 27 as obvious in view of Murao and PK. However, claim 27 depends from claim 26 which is not rejected based on the combination of these two references. As such, the applicants respectfully submit that claim 27 cannot be rendered obvious over Murao in view of PK as all of the limitations of this claim 27 when considering the claims from which it depends are admitted by the Examiner not to be met by Murao and PK taken together. Reconsideration of claim 27 for this additional reason is respectfully solicited.

The Examiner has also rejected claims 24 and 25 under 35 U.S.C. §103(a) as being unpatentable over Murao and PK, in view of White. The applicants have thoroughly considered each of these references taken alone and in combination, and must respectfully traverse this ground of rejection. Reconsideration of this ground of rejection and indication of the allowability of claims 24 and 25 at an early date are respectfully solicited.

As described above, the combination of Murao and PK does not meet each and every limitation of independent claim 22 nor the limitations added by dependent claim 23 from

which these claims depend. As such, the applicants respectfully submit that these claims are in condition for allowance for the reasons stated above with regard to claims 22 and 23.

Additionally, the applicants respectfully submit that the addition of the White reference does not overcome the deficiency of Murao and PK. Specifically, and as described in detail above, the White reference requires that the voltage of the top half and bottom half of the batteries be measured and compared for acceptable matching. This monitoring method does not teach or suggest the monitoring required by claims 24 or 25. Indeed, the White reference teaches away from monitoring a float voltage on page 628 wherein it is stated "the float voltage readings gave no hint of an unusually weak battery in the string." This explicit statement teaches away from the requirement of claim 24 of monitoring the voltage sense signal for each slot during a float charge mode. According to White, monitoring the float voltage would give no hint of an unusually weak battery in the string. However, claim 24 specifically requires that the voltage sense signal be monitored during a float charge mode. Therefore, this combination of references teaches away from the requirements of claim 24 and therefore cannot render it obvious. Reconsideration of this ground of rejection and indication of the allowability of claim 24 is therefore respectfully solicited.

The Examiner has also rejected claims 26 and 27 under 35 U.S.C. §103(a) as being unpatentable over Murao and PK in view of Finger. The applicants have thoroughly considered each of these references taken alone and in combination, but must respectfully traverse this ground of rejection. Reconsideration of this ground of rejection and indication of the allowability of claims 26 and 27 at an early date in view of the following remarks are respectfully solicited.

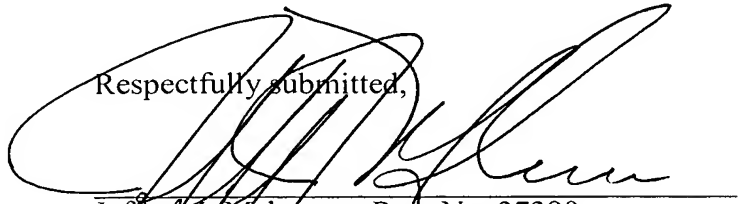
As discussed at length above, the combination of Murao and PK failed to teach each and every limitation of independent claim 22 from which claims 26 and 27 depend. The addition of Finger fails to overcome this deficiency, and therefore the applicants respectfully submit that claims 26 and 27 are in condition for allowance for the reasons stated above with regard to independent claim 22.

In view of the above the applicants respectfully submit that claims 1-27 are in condition for allowance. Reconsideration of this application and indication of the allowability of claims 1-27 at an early date are respectfully solicited.

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If the Examiner believes that a telephonic conversation will aid in the resolution of any issues not resolved herein, the Examiner is invited to contact the applicants attorney at the telephone number listed below.

Respectfully submitted,



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